It's Gonna Be Big

Let's say that you are a scientist at a balloon company. You have come up with a new rubber material for making balloons. The question you have is: How does each breath you blow into the balloon affect how big around the balloon gets?

Materials:

- Large round balloon
- Measuring tape (or string and metric ruler)
- Paper and pencil

Procedures:

1. Make a chart like the one below. Stretch the balloon a few times so that it is easier to blow up.

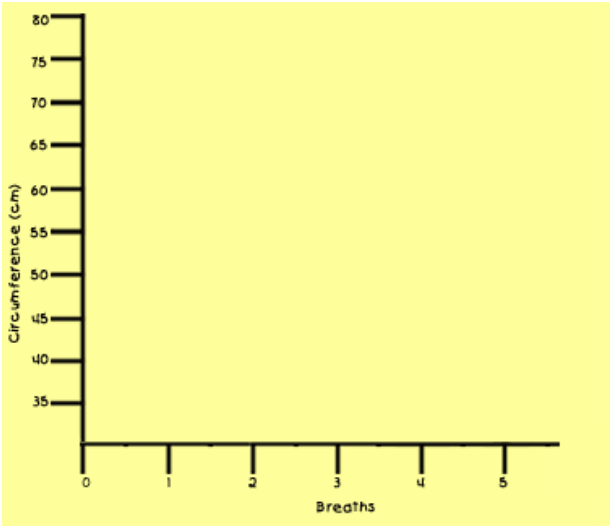
Breaths	0	1	2	3	4	5
Circumference (cm)	0					

2. Blow one breath into the balloon and twist or pinch the end closed.
3. Have your partner measure around the widest part of the balloon. This is the circumference. Record the number of centimeters your balloon measured next to "circumference" under the "1" for one breath.

4. Use four more breaths as close to the amount of air you blew out in your first breath. Measure the circumference of the balloon after each breath and record your results in the chart.

Let's Graph it!

Make a graph like the one shown. Use the information in your chart to make a graph of the results of your experiment. Does the circumference of the balloon change the same amount with each breath?



Think about this

If the circumference of the balloon got bigger by the exact same amount for each breath, what would the line on the graph look like? You can make a sample graph to find out.

Where's the Chemistry?

The circumference of the balloon should get bigger with each breath you blow in. But the increase in size should be biggest with the first breath, smaller with the next, and then smaller with the next and so on. Look at your graph and see if the graph tells you that the size is increasing but that the amount of increasing is decreasing! If the circumference increased by the same amount with each breath, the graph would be a diagonal line with no curve in it at all.

The American Chemical Society develops materials for elementary school age children to spark their interest in science and teach developmentally appropriate chemistry concepts. The *Activities for Children* collection includes hands-on activities, articles, puzzles, and games on topics related to children's everyday experiences.

The collection can be used to supplement the science curriculum, celebrate National Chemistry Week, develop Chemists Celebrate Earth Day events, invite children to give science a try at a large event, or to explore just for fun at home.

Find more activities, articles, puzzles and games at www.acs.org/kids.

Safety Tips

This activity is intended for elementary school children under the direct supervision of an adult. The American Chemical Society cannot be responsible for any accidents or injuries that may result from conducting the activities without proper supervision, from not specifically following directions, or from ignoring the cautions contained in the text.

Always:

- Work with an adult.
- Read and follow all directions for the activity.
- Read all warning labels on all materials being used.
- Wear eye protection.
- Follow safety warnings or precautions, such as wearing gloves or tying back long hair.
- Use all materials carefully, following the directions given.
- Be sure to clean up and dispose of materials properly when you are finished with an activity.
- Wash your hands well after every activity.

Never eat or drink while conducting an experiment, and be careful to keep all of the materials used away from your mouth, nose, and eyes!

Never experiment on your own!

For more detailed information on safety go to www.acs.org/education and click on "Safety Guidelines".